Solar,
Third-party Financing (PPAs),
and
Building a Solar Market

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SOLAR POWER PARTNERS™

Agenda

1. Who is Solar Power Partners?
2. Why Distributed Generation Solar?
3. What are the benefits of a PPA?
5. How to create a solar market: Build the policies and industry will come!
4. Where….KANSAS!!!!!

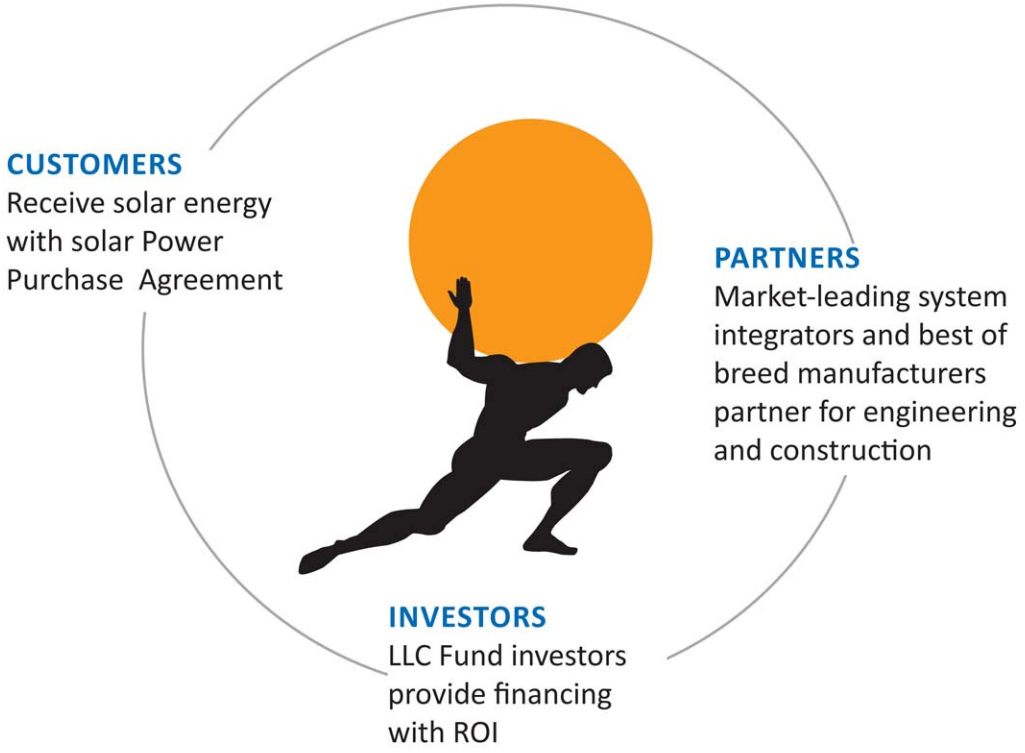
Who is Solar Power Partners?

SOLAR POWER PARTNERS

Solar Power Partners, America's premier independent solar power producer, helps businesses, institutions, municipalities, agricultural customers, and utilities embrace solar energy.

SPP develops, owns, and operates commercial distributed photovoltaic solar energy facilities (SEFs), and sells solar-generated electricity through solar Power Purchase Agreements (PPAs) to customers.

The PPA Services Model



Solar Power Partners, Inc

- **Commercial Distributed Photovoltaic (PV) Solar Developer.**
  - Founded 2006: headquartered in Mill Valley, CA.
  - Develop, own, and operate/maintain
  - Arrange the financing for each project
  - Negotiate Engineering, Procurement, Construction (EPC) contracts with qualified solar integrators
  - Ensure each project uses best-of-breed products (not constrained by in-house product line)
  - Provide oversight/management of construction
  - Generate value via on-going asset management for optimal long-term (20yr+) performance

Sample of SPP Projects

- Cal-Tech
  239 KW DC
  Fixed Raised.
  Completion
  Nov 2008.

- UCSD
  878 KW DC
  Fixed Raised
  and Roof.
  Completion
  Dec 2008.

- West County Wastewater District
  1.0 MW DC
  Dual-Axis Tracking.
  Completion
  Dec 2008.

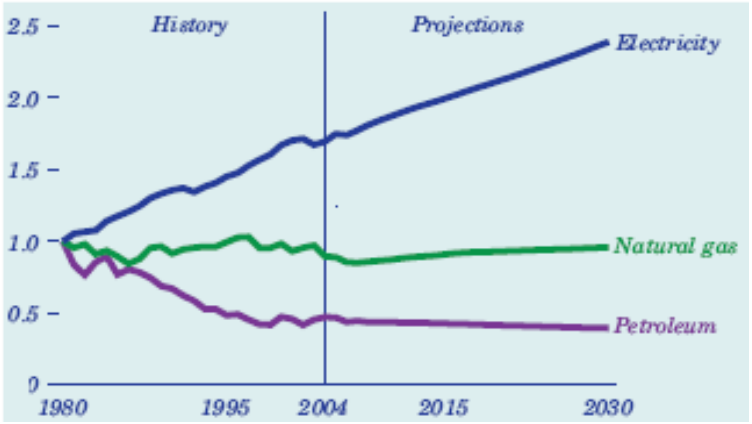
- Fresno Int'l Airport
  2.4MW DC
  Single-Axis
  Tracking.
  Completion
  Sept 2008.

- Placer County Detention Center **400 KW DC**
  Fixed Ground.
  Completion
  Oct 2008.

Why Distributed Generation Solar?

Why Distributed Generation Solar?

- Avoid transmission constraints
- Insulates against volatility in electricity rates.
- Offsets peak rates, by producing KWh during peak hours.
- General produces at different times than wind

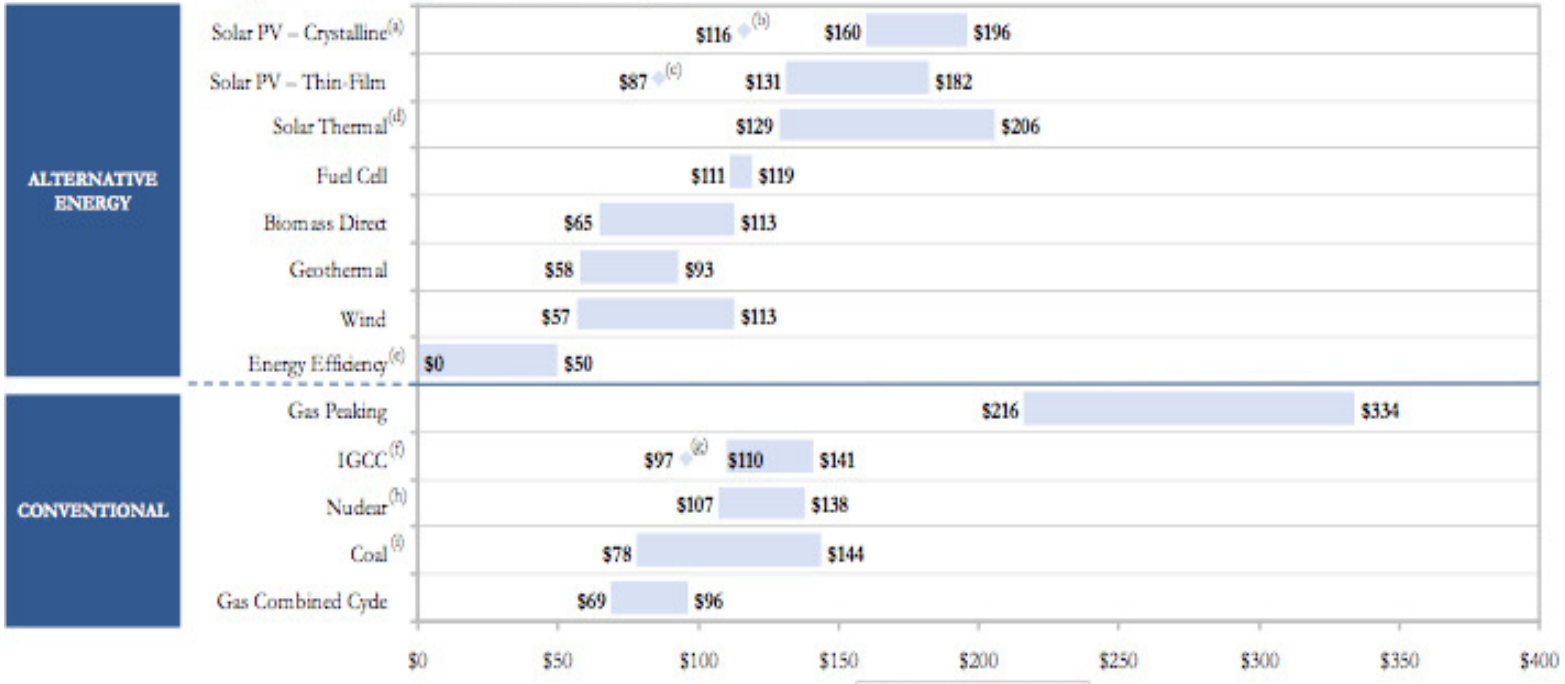


Electricity demand (and rates) continue to rise.

- Silent, emissions-free energy production by farming the sun. Little-to-no environmental impact.
- No moving parts, low-maintenance.
- Unused space (roof, ground, parking lot) become assets.
- Inter-connected to the utility grid, ensuring no interruptions in power supply.
- Increases real property value. Contributes to LEED certification.

Levelized Cost of Energy Comparison

Certain Alternative Energy generation technologies are becoming increasingly cost-competitive with conventional generation technologies under some scenarios, before factoring in environmental and other externalities (e.g., RECs, potential carbon emission costs, transmission and back-up generation/system reliability costs) as well as construction and fuel costs dynamics affecting conventional generation technologies



Source: Lazard estimates.

Note: Reflects production tax credit, investment tax credit and accelerated asset depreciation, as applicable. Assumes 2008 dollars, 20-year economic life, 40% tax rate and 5-20 year tax life. Assumes 30% debt at 8.0% interest rate, 40% tax equity at 8.5% cost and 30% common equity at 12% cost for Alternative Energy generation technologies. Assumes 60% debt at 8.0% interest rate and 40% equity at 12% cost for conventional generation technologies. Assumes coal price of $2.50 per MMBtu and natural gas price of $6.00 per MMBtu.

(a) Low end represents single-axis tracking crystalline. High end represents fixed installation.
(b) Represents estimated implied levelized cost of energy in 2012, assuming a total system cost of $3.50 per watt for single-axis tracking crystalline.
(c) Represents a leading thin-film company's targeted implied levelized cost of energy in 2012, assuming a total system cost of $2.00 per watt.
(d) Low end represents solar tower. High end represents solar trough.
(e) Estimates per National Action Plan for Energy Efficiency; actual cost for various initiatives varies widely.

What are the benefits of Power Purchase Agreements (PPAs)?

Third-Party Financing: Public-Private Partnerships

A solar Power Purchase Agreement (PPA) is a long-term agreement to buy power from a company that produces electricity. Using private source of funds, the provider builds a solar energy facility on our customer's site and operates and maintains it.

- **No Capital Investment.** SPP provides the capital to develop your solar project.
- **Energy Price Hedge.** The cost of each KWh consumed is defined over a 20+ year period.
- **No O&M Liability.** Unlike a lease, no performance risk or cost of operations and maintenance.
- **Simplified Approval Process.** SPP's PPA model is often much easier to justify to management (City Council, Board of Supervisors) than a lease or outright capital purchase with long-term O&M cost.
- **Investment Tax Credit (ITC).** SPP monetizes the ITC and accelerated depreciation to subsidize the PPA on behalf of the city/county, which otherwise would not qualify. Even on a 0% interest loan or grant, host ends up paying 40% more for solar (w/o ITC + associated depreciation).

Who Benefits from Solar PPAs?

Schools and Universities

Land-rich campuses can free up capital to use for other much-needed projects and build solar into their educational curriculum.

Government buildings

No money down means taxpayers aren't footing the bill; can't take advantage of ITC but SPP can.

Healthcare facilities

Solar project often fits in with wellness mission; capital goes to other things like updated medical equipment.

Public entities

Water and water treatment facilities can assure rate payers of energy price hedges.

Businesses

Businesses can use their limited capital to grow their business and still get the benefit of clean energy.

How to create a solar market: Build the policies and the industry will come!

The PV Policy Tool Kit

- Interconnection
- Net Metering
- Rate Design
- Incentives
- Financing Options
- Community Solar
- Feed-in Tariffs
- AMI/Smart Grid
- Energy Storage

The Essentials

- **Interconnection**
- **Net Metering**
- **Rate Design**
- **Incentives**
- **Financing Options**
- Community Solar
- Feed-in Tariffs
- AMI/Smart Grid
- Energy Storage

Advanced Tools

- Interconnection
- Net Metering
- Rate Design
- Incentives
- Financing Options
- **Community Solar**
- **Feed-in Tariffs**
- AMI/Smart Grid
- Energy Storage

Tools to Facilitate High Penetration PV

- Interconnection
- Net Metering
- Rate Design
- Incentives
- Financing Options
- Community Solar
- Feed-in Tariffs
- **AMI/Smart Grid**
- **Energy Storage**

Interconnection and Net Metering

Interconnection Standards

(facility size in kilowatts)

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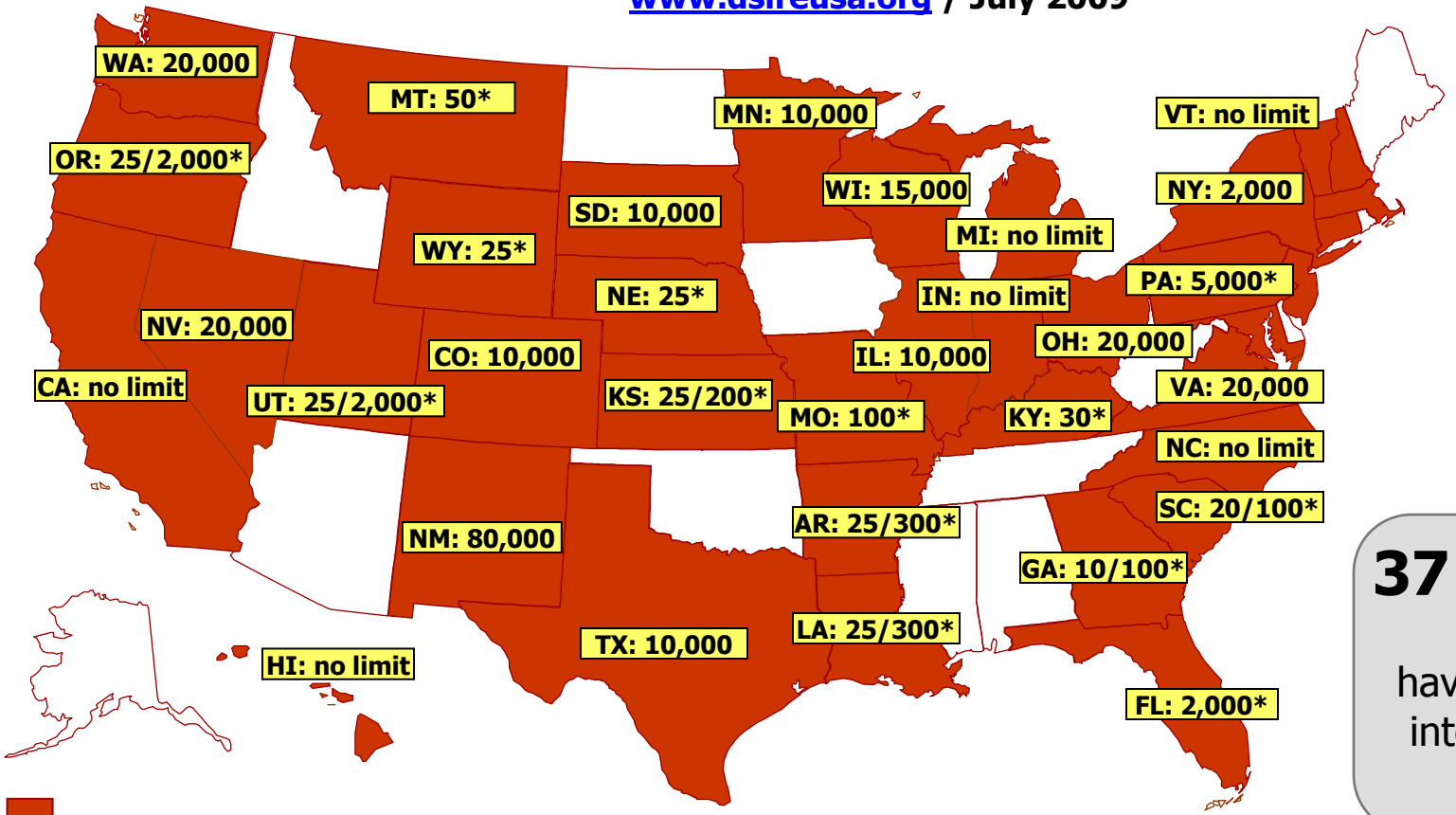

State policy

* Standard only applies to net-metered systems

37 states + DC & PR have adopted an interconnection policy

Notes: Numbers indicate system capacity limit in kW. Some state limits vary by customer type (e.g., residential/non-residential). "No limit" means that there is no stated maximum size for individual systems. Other limits may apply. Generally, state interconnection standards apply only to investor-owned utilities.

Net Metering

(facility size in kilowatts)

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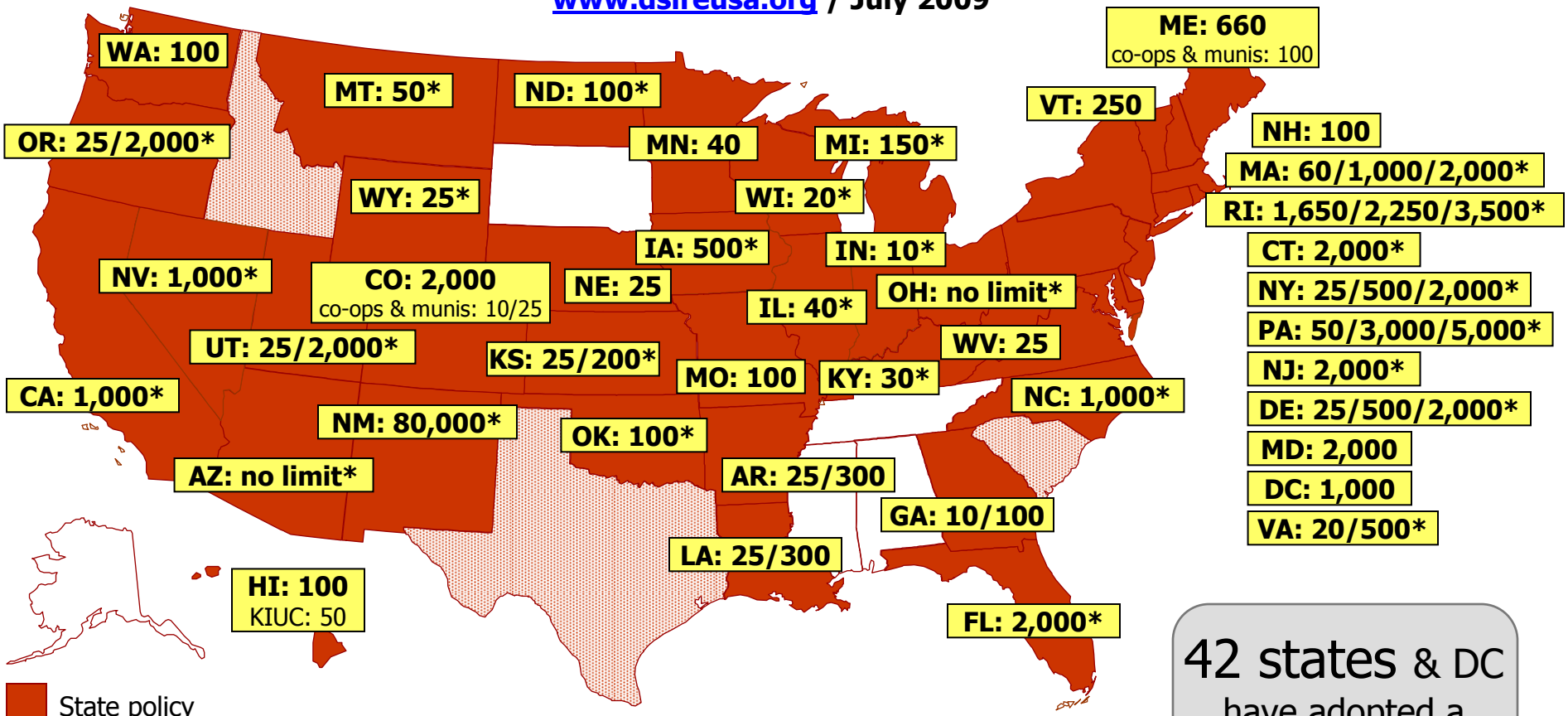


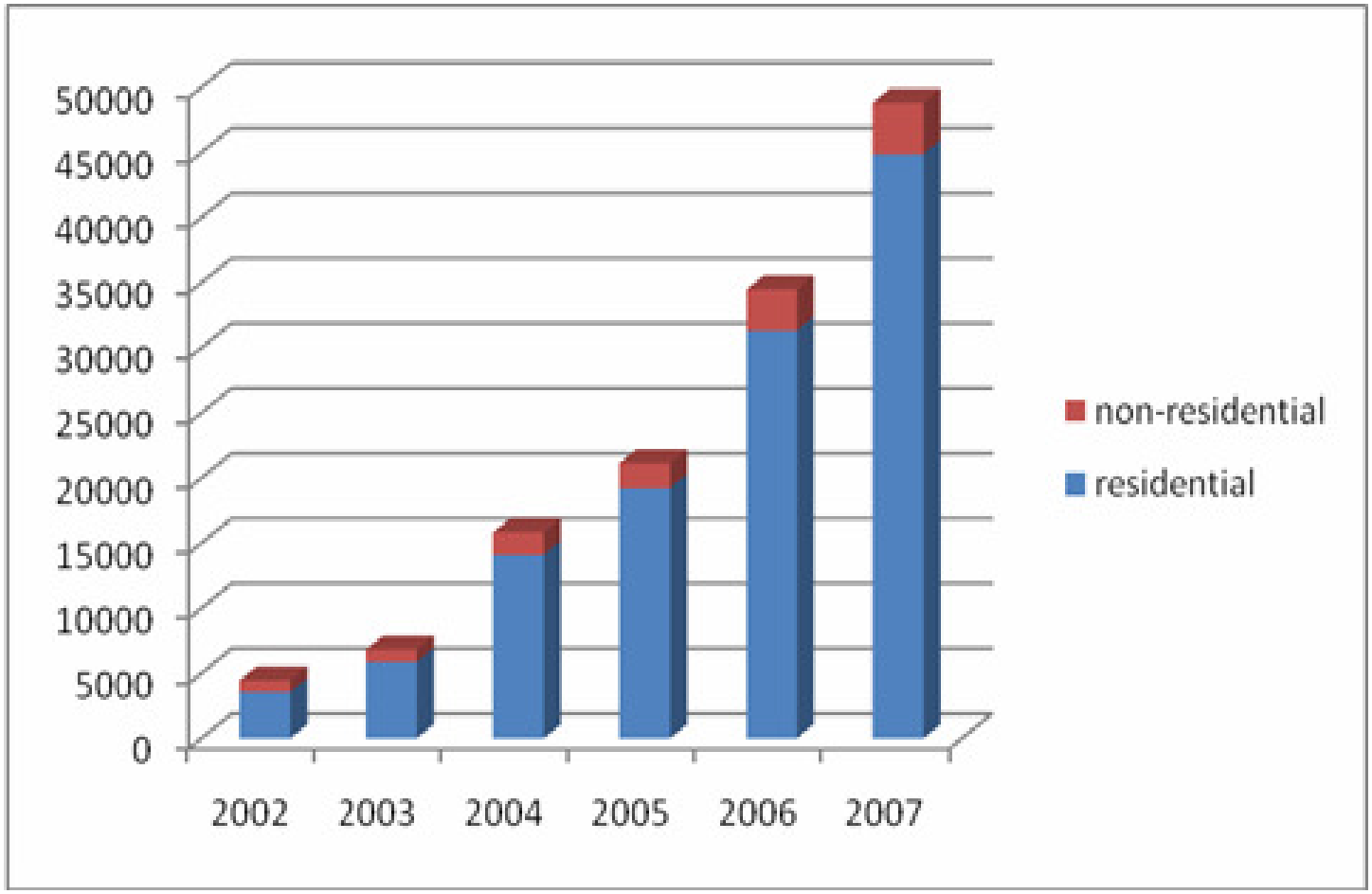
State policy

Voluntary utility program(s) only

* State policy applies to certain utility types only (e.g., investor-owned utilities)

42 states & DC have adopted a net metering policy

Number of Net Metered Systems in the U.S.

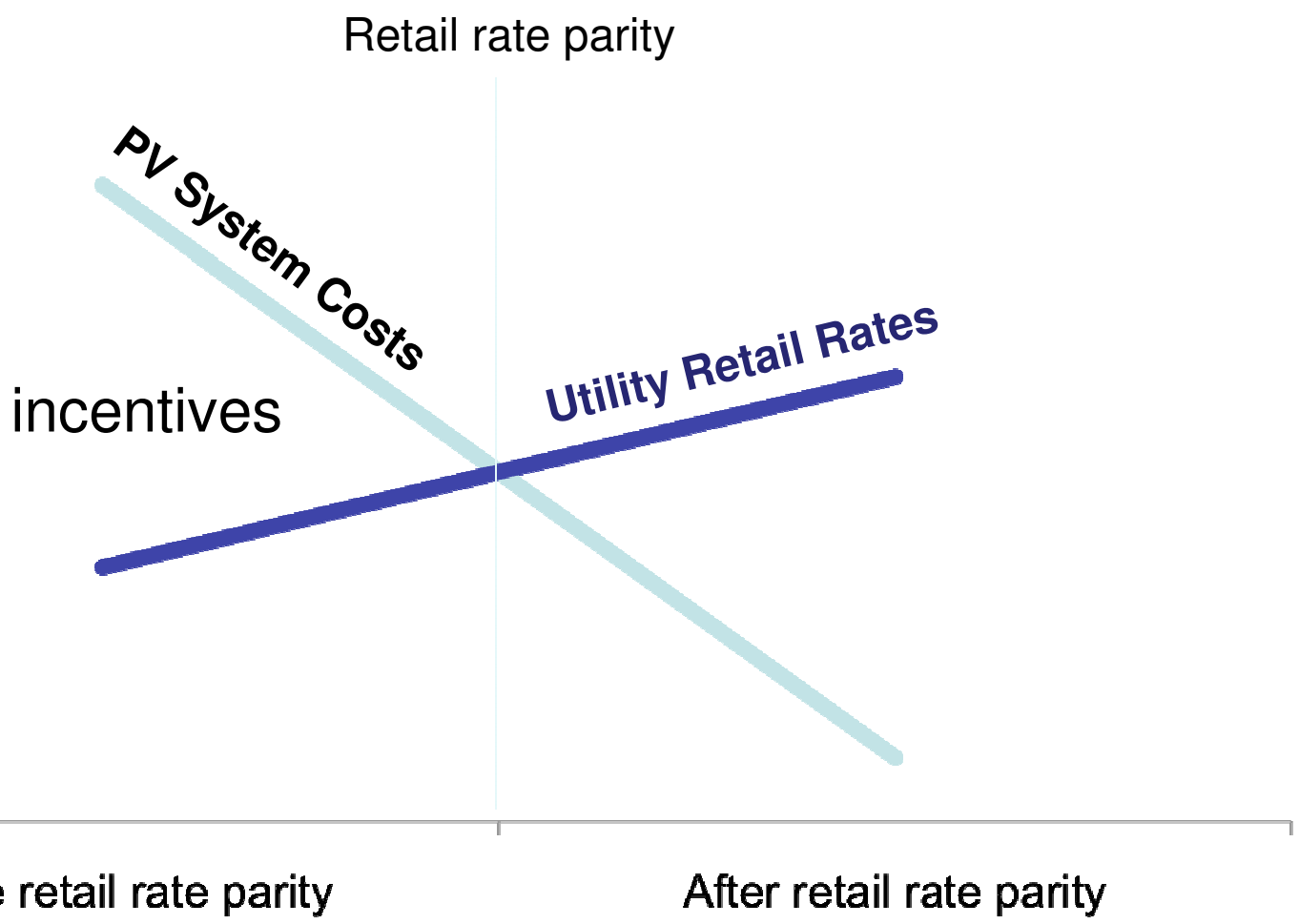


Rate Design and Incentives

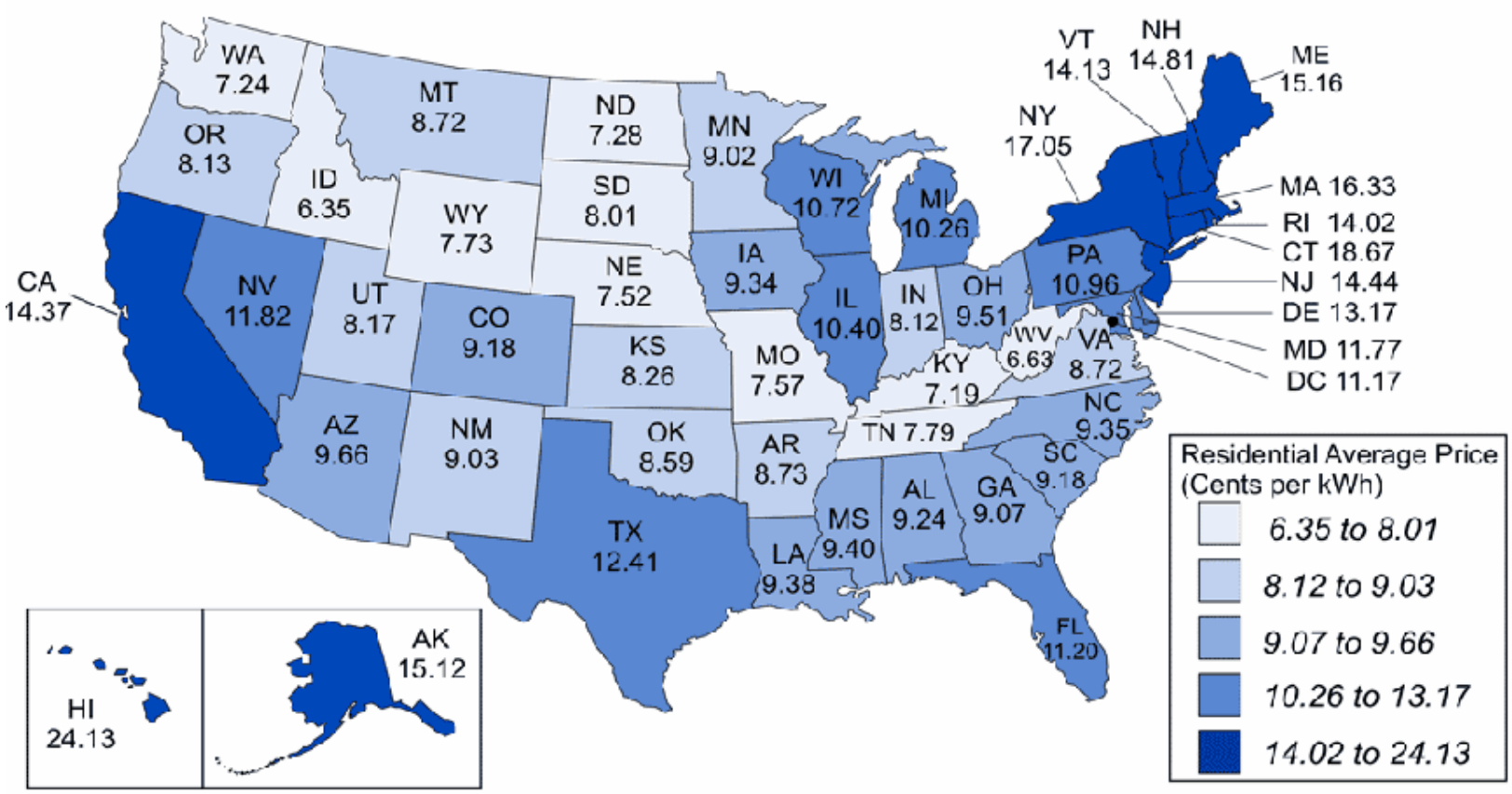
Rate Design and Incentives

- Rate Design
  - Establishes a benchmark for PV cost-effectiveness
  - Retail utility rates increases make PV more cost-effective
  - Rate design can also make PV more cost-effective
    - High inclining block rates and on-peak rates
    - Low fixed charges and demand charges
    - Provides an incentive for daytime conservation and exports
- Incentives
  - Close existing gap between utility rates and PV costs
  - States vary regarding the delta between the two
  - Incentives no longer necessary when retail rates exceed installed PV costs

Interconnection and Net Metering

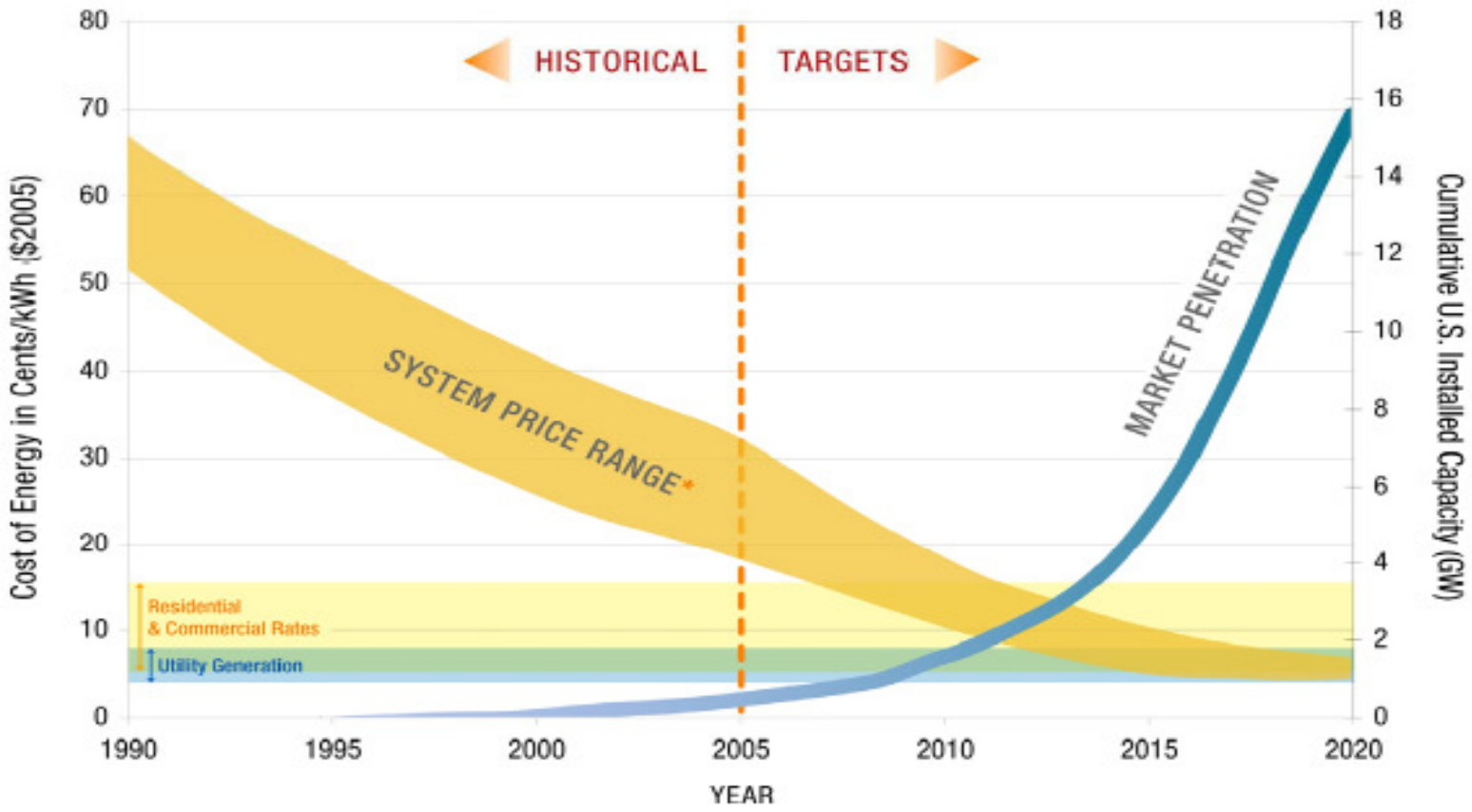


Average Residential Retail Rates, 2007



Source: Energy Information Administration, Form EIA-826, "Monthly Electric Sales and Revenue with State Distributions Report."

PV System Costs are Decreasing



Market Sector	Current U.S. Market Price Range (¢/kWh)	Cost (¢/kWh) Benchmark 2005	Cost (¢/kWh) Target 2010	Cost (¢/kWh) Target 2015
Residential	5.8-16.7	23-32	13-18	8-10
Commercial	5.4-15.0	16-22	9-12	6-8
Utility	4.0-7.6	13-22	10-15	5-7

Financial Incentives for Solar PV

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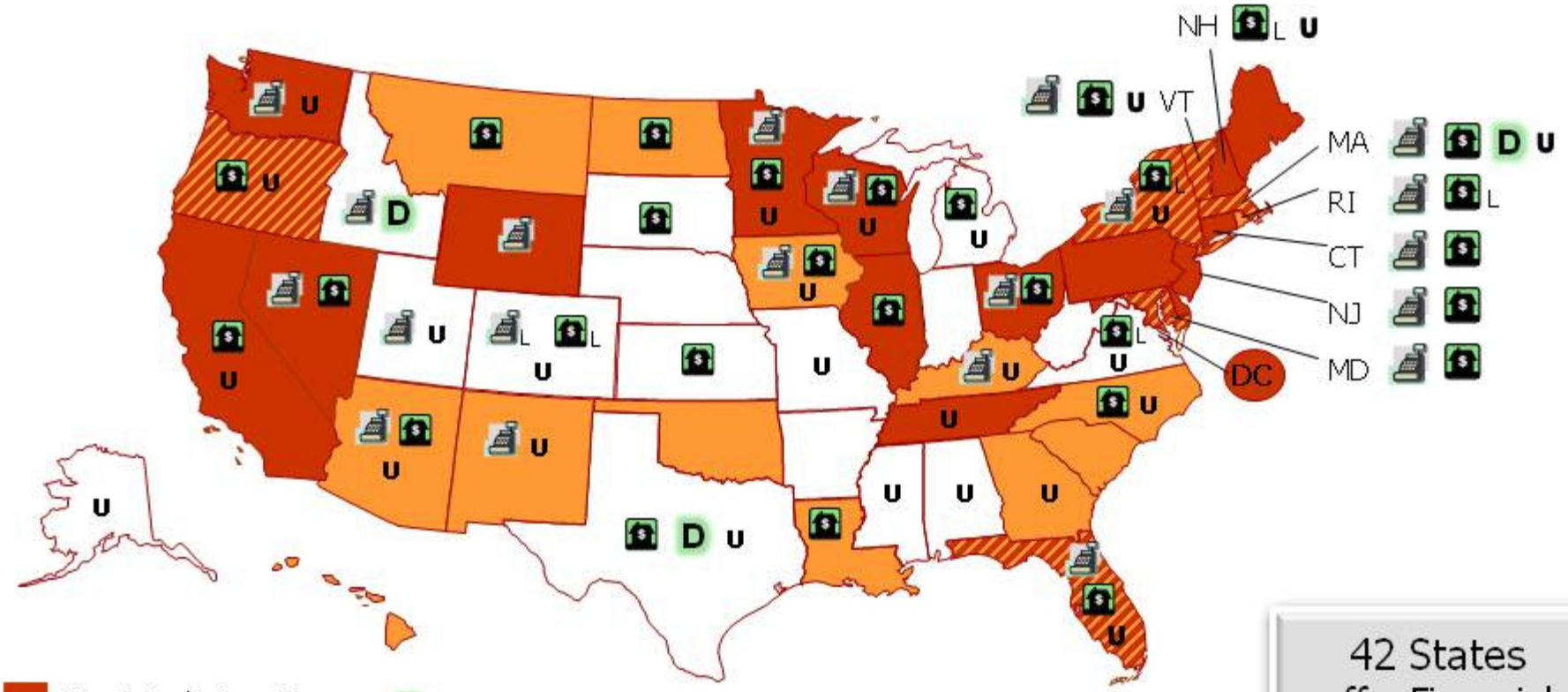


Direct Cash Incentive
Tax Credit
Direct Cash Incentive and Tax Credit

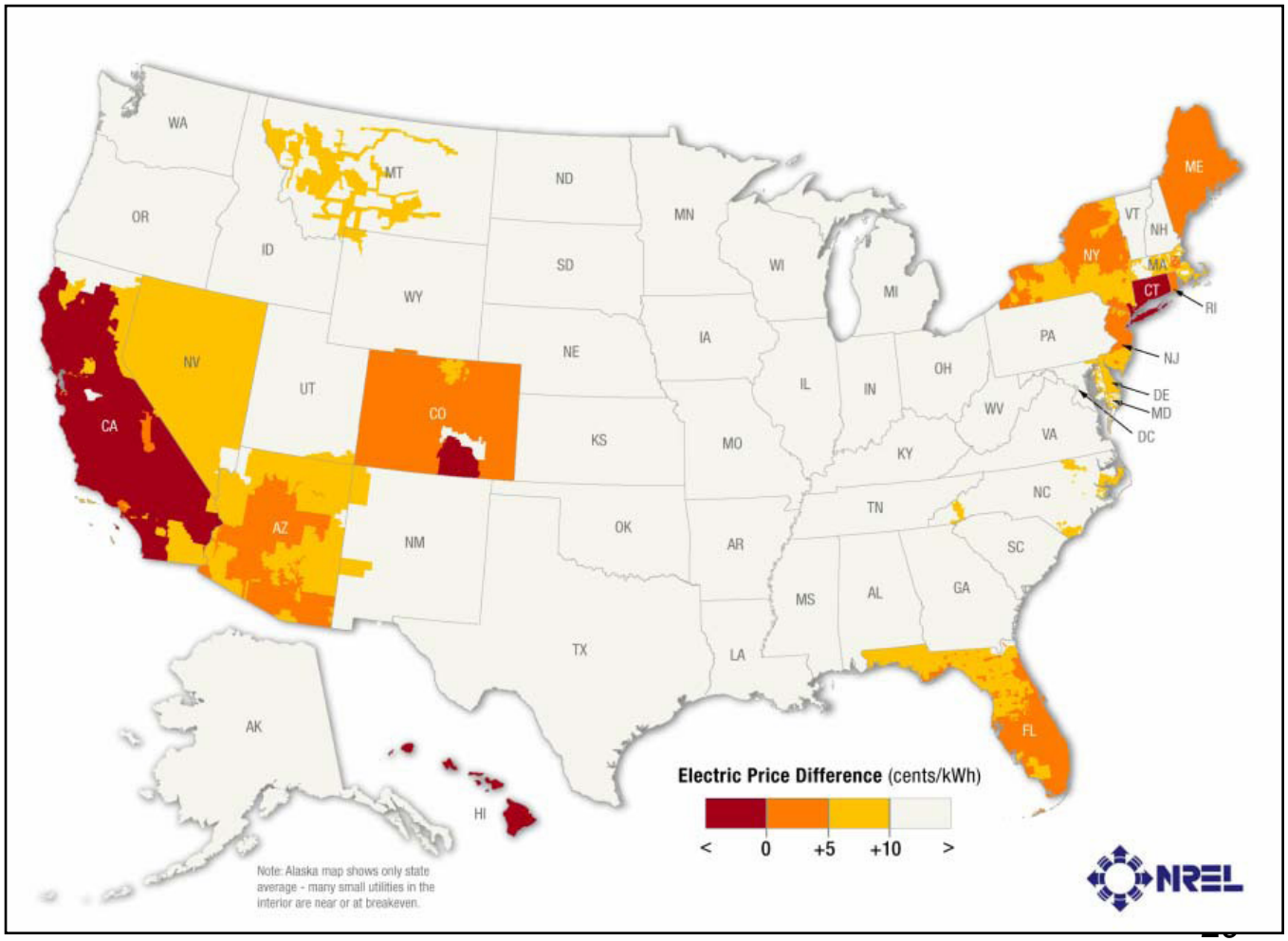
D Tax Deduction
Sales Tax Incentive
Property Tax Incentive

U Utility Incentive(s)
L Local option to provide tax incentive

42 States offer Financial Incentives for Solar PV

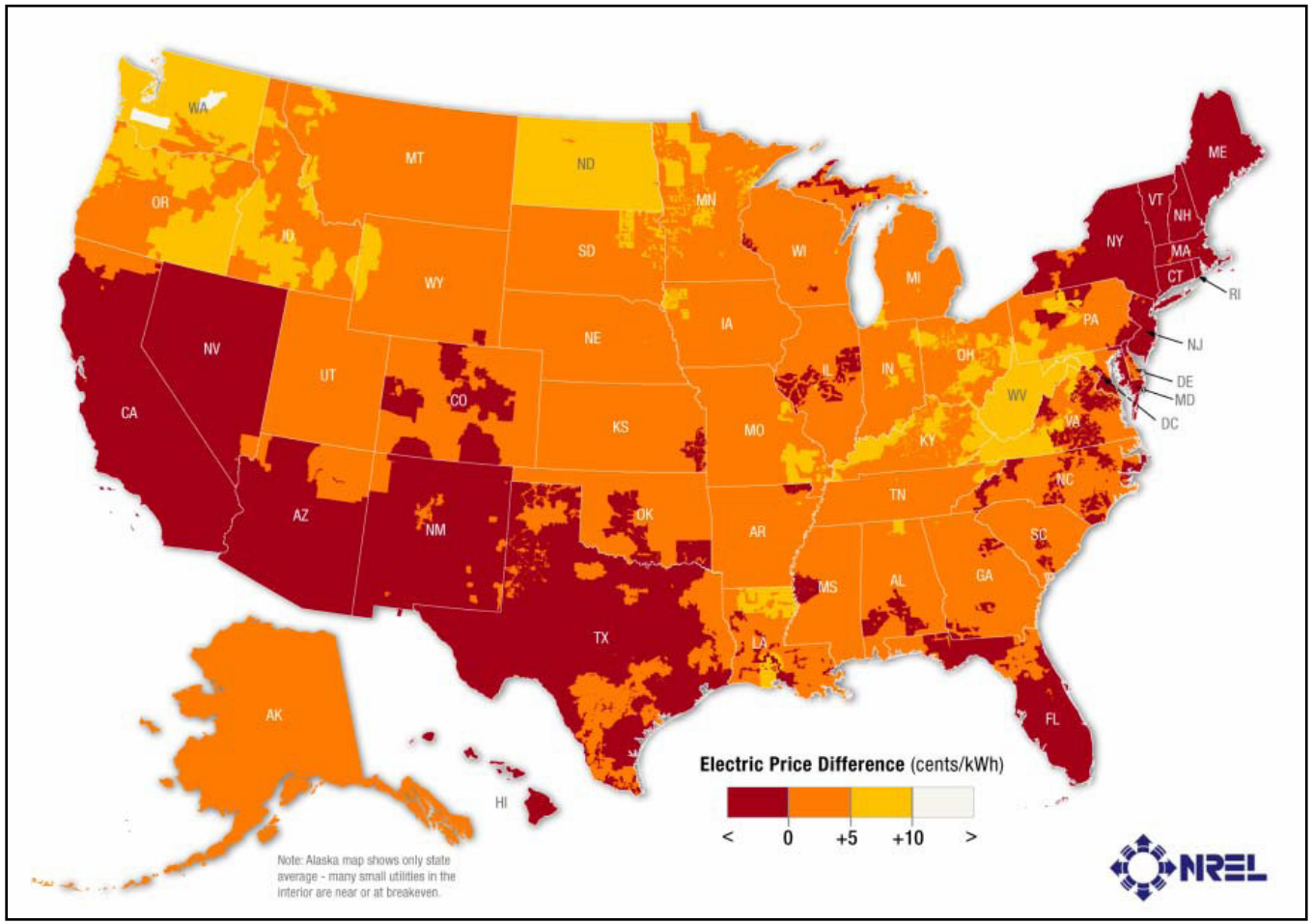
2007 residential PV and electricity price differences with existing incentives

- Currently PV is financially competitive where there is some combination of high electricity prices, excellent sunshine and/or state/local incentives.



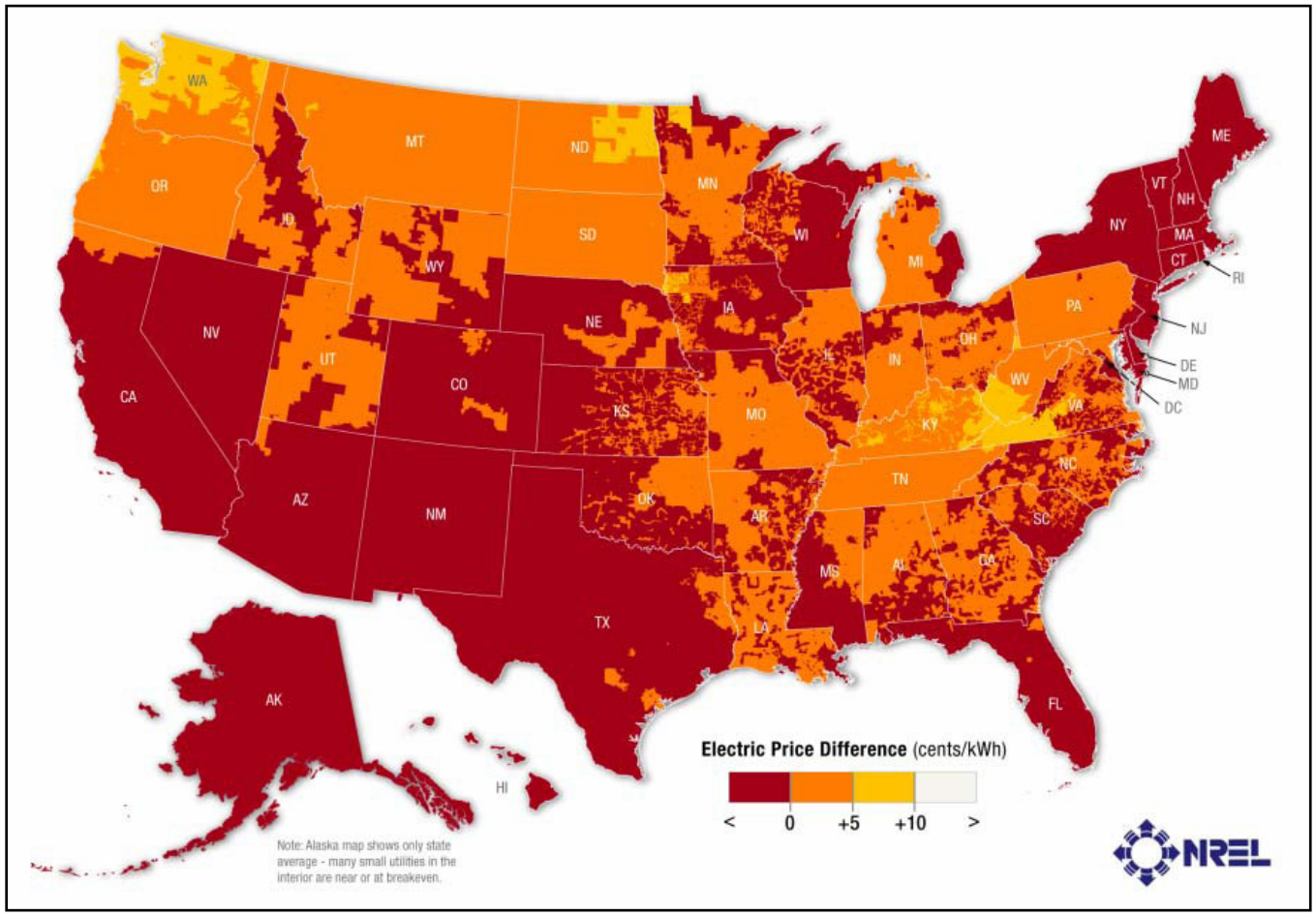
2015 residential installations without incentives and moderate increase in electricity prices

- Attractive in about 250 of 1,000 largest utilities, which provide ~37% of U.S. residential electricity sales.
- 85% of sales (in nearly 870 utilities) are projected to have a price difference of less than 5 ¢/kWh between PV and grid electricity.
- In large areas, PV is cheaper than grid electricity



2015 residential installations without incentives and aggressive increase in electricity prices

- Attractive in about 450 of 1,000 largest utilities, which provide ~50% of U.S. residential electricity sales.
- 91% of sales (in nearly 950 utilities) have a price difference of less than 5 ¢/kWh between PV and grid electricity.
- Across most of the highest U.S. population areas, PV is cheaper than grid electricity.



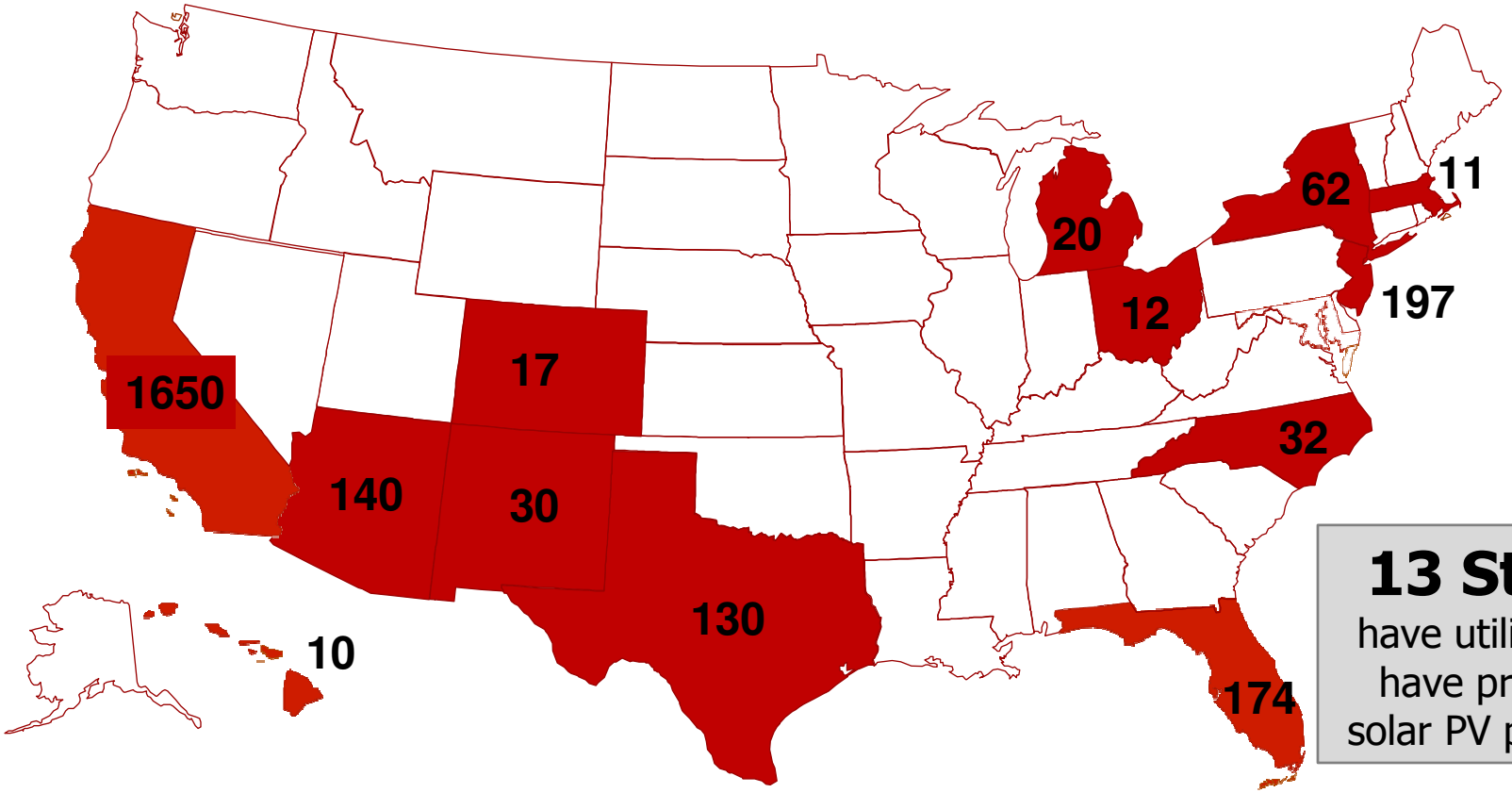
Financing Options

Financing Options

- Who pays the up front cost?
  - Customer finances through direct purchase
  - Ratepayer's finance through utility solar program, either utility owned or sold to utility under wholesale sale arrangement
  - Third party finances under a retail Solar Services Agreement
  - Municipality or government entity finances through a local clean energy financing policy

Ratepayer Financing

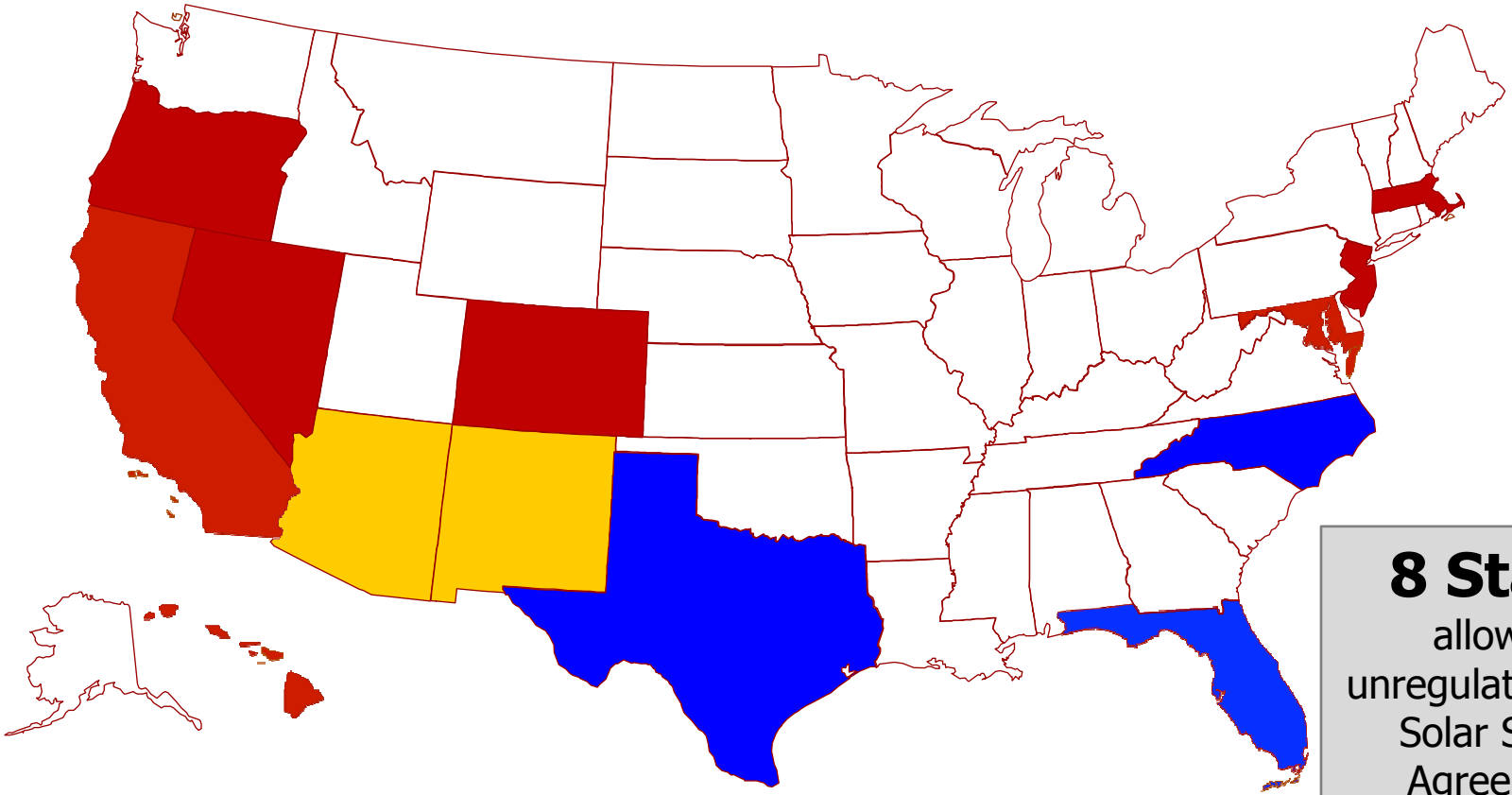
Announced Utility Solar PV Projects (MW)



13 States
have utilities that have proposed solar PV programs

States with utility solar proposals

Third-party Financing through Solar Service Agreement



8 States
allow the unregulated use of Solar Service Agreements

States where Solar Service Agreements are not regulated

States currently addressing regulation of Solar Service Agreements through formal processes

States with problems or restrictions on the use of Solar Service Agreements

Local Clean Energy Financing Policies

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11 states
have adopted a Local Clean Energy Financing Policy;

3 states with bills awaiting approval

Advanced Tools

Community Solar

- Reasons
  - Multi-tenant properties
  - Customers with multiple meters
  - No location for solar on-site PV installation , e.g. shading
  - Facilitate co-ownership
- States that have implemented
  - Meter aggregation
    - Washington – must be located on a single customer's property within service territory of 1 utility
    - Pennsylvania – must be located on a single customer's property within 2 mile radius
    - Oregon – must be located on a single customer's property within service territory of 1 utility
  - Joint billing
    - Vermont – group billing
  - Virtual net metering / community solar
    - Massachusetts – neighborhood net metering
    - Rhode Island – virtual net metering
    - California – virtual net metering (multi-tenant low-income and government buildings)
  - Shared ownership
    - Maine – co-ownership

Feed-in Tariffs

- Reasons
  - Accommodates systems that exceed on-site needs
  - Accommodates installations where there is no on-site load
  - Streamlines procurement for distributed resources
- States that have implemented
  - California – AB 1969 FITs
  - Vermont – has not yet been implemented
  - Gainesville – municipal utility program
- States that are considering
  - Hawaii – has an ongoing rulemaking to develop rules
  - California – considering expansion to larger systems

Tools to Facilitate High Penetration PV

- AMI/Smart Grid
  - Integrate intermittent generation and demand response to smooth out intermittency
- Energy Storage
  - Ancillary services
  - Smooth out intermittency

Where….Kansas!

Thank You and Q&A

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